

Name:

Solutions

Davis

THE UNIT 4 TEST IS ON MONDAY, MAY 9

1. Evaluate $\sec T = \frac{10}{6} = \frac{5}{3}$

2. Evaluate $\csc C = \frac{10}{6} = \frac{5}{3}$

3. Evaluate $\cot C = \frac{8}{6} = \frac{4}{3}$

4. Evaluate $\sin T = \frac{8}{10} = \frac{4}{5}$

5. Evaluate $\cos C = \frac{8}{10} = \frac{4}{5}$

6. Evaluate $\tan T = \frac{8}{6} = \frac{4}{3}$

7. Complete the statement (fill in the blank): $\sin 17^\circ = \cos 73^\circ$

8. True or False: $\sin \theta = \cos(90 - \theta)$ *True*

9. Convert $\frac{\pi}{3}$ to an angle measure in degrees.

60°

10. Convert $\frac{5\pi}{4}$ to an angle measure in degrees..

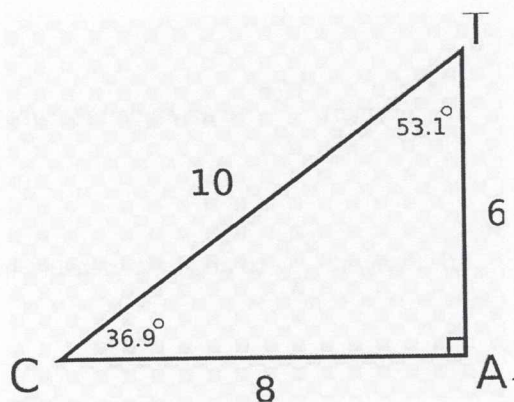
225°

11. Convert $\frac{7\pi}{6}$ to an angle measure in degrees.

210°

12. Convert $\frac{\pi}{2}$ to an angle measure in degrees.

90°



13. Convert $\frac{4\pi}{3}$ to an angle measure in degrees.

240°

14. Convert $\frac{3\pi}{2}$ to an angle measure in degrees.

270°

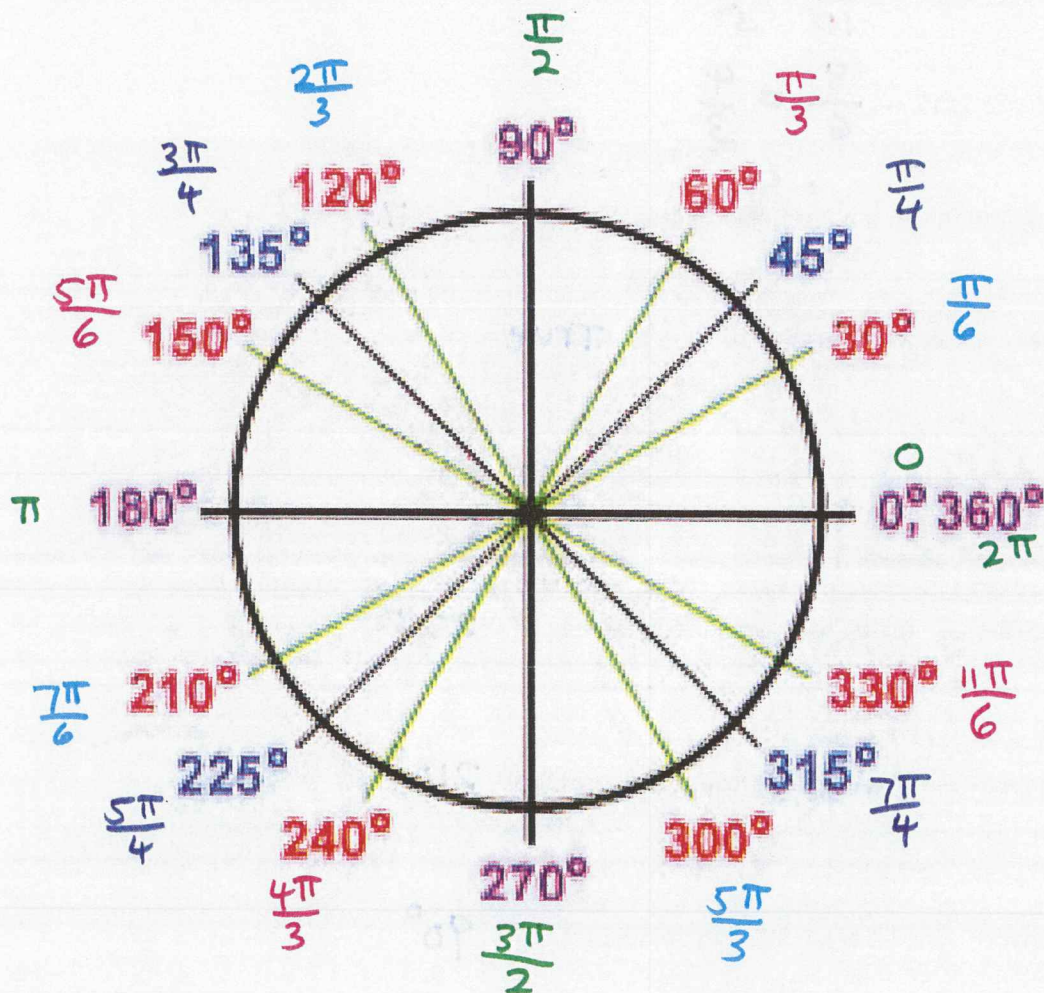
15. Convert $\frac{11\pi}{6}$ to an angle measure in degrees.

330°

16. Convert $\frac{2\pi}{3}$ to an angle measure in degrees.

120°

17. Next to each degree angle measure, write its equivalent radian angle measure:



18. Write $\sin 135^\circ$ in terms of a reference angle

$$\sin 45^\circ$$

19. Write $\sec \frac{7\pi}{4}$ in terms of a reference angle

$$\sec \frac{\pi}{4}$$

20. Write $\tan 330^\circ$ in terms of a reference angle

$$-\tan 30^\circ$$

21. Write $\sin \frac{7\pi}{6}$ in terms of a reference angle

$$-\sin \frac{\pi}{6}$$

22. Write $\cos 240^\circ$ in terms of a reference angle

$$-\cos 60^\circ$$

23. Write $\cot \frac{5\pi}{3}$ in terms of a reference angle

$$-\cot \frac{\pi}{3}$$

24. Write $\csc 210^\circ$ in terms of a reference angle

$$-\csc 30^\circ$$

25. Write $\cos 310^\circ$ in terms of a reference angle

$$\cos 50^\circ$$

26. Write $\cos 200^\circ$ in terms of a reference angle

$$-\cos 20^\circ$$

27. Write $\tan 280^\circ$ in terms of a reference angle

$$-\tan 80^\circ$$

28. Write $\sin 185^\circ$ in terms of a reference angle

$$-\sin 5^\circ$$

29. Write $\sec 350^\circ$ in terms of a reference angle

$$\sec 10^\circ$$

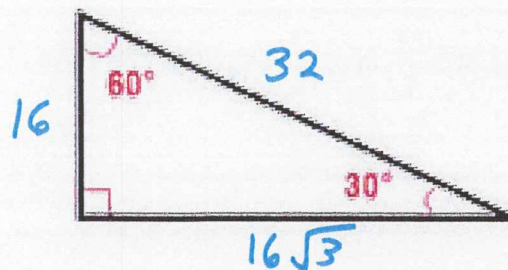
30. Write $\cot 140^\circ$ in terms of a reference angle

$$-\cot 40^\circ$$

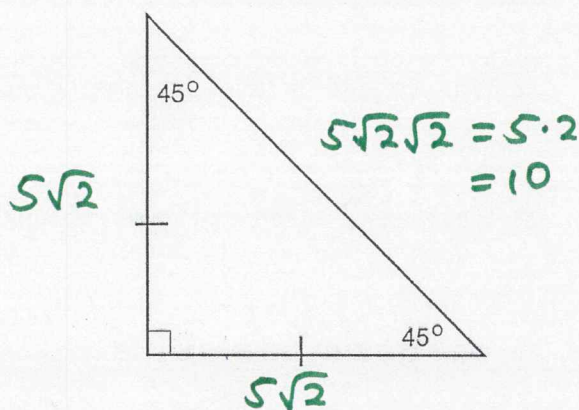
31. Write $\csc 95^\circ$ in terms of a reference angle

$$\csc 85^\circ$$

32. Given the special triangle below with 16 as its shortest leg length, find the lengths of the other two sides.



33. Given the special triangle below with $5\sqrt{2}$ as its leg length, find the lengths of the other two sides.



34. Evaluate the trigonometric expression $\sin \frac{\pi}{4} = \frac{\sqrt{2}}{2}$

35. Evaluate the trigonometric expression $\cos 30^\circ = \frac{\sqrt{3}}{2}$

36. Evaluate the trigonometric expression $\tan \frac{\pi}{3} = \sqrt{3}$

37. Evaluate the trigonometric expression $\csc 225^\circ = -\sqrt{2}$

38. Evaluate the trigonometric expression $\sec \frac{7\pi}{6} = -\frac{2}{\sqrt{3}} = -\frac{2\sqrt{3}}{3}$

39. Evaluate the trigonometric expression $\cot 330^\circ = -\sqrt{3}$

40. Evaluate the trigonometric expression $\sin \frac{2\pi}{3} = \frac{\sqrt{3}}{2}$

41. Evaluate the trigonometric expression $\cos 225^\circ = -\frac{\sqrt{2}}{2}$

42. Evaluate the trigonometric expression $\tan 2\pi = 0$

43. Evaluate the trigonometric expression $\cot \frac{\pi}{2} = 0$

44. Evaluate the trigonometric expression $\sec 135^\circ = -\sqrt{2}$

45. Evaluate the trigonometric expression $\cos \pi = -1$

46. Convert $\frac{\pi}{5}$ to an angle measure in degrees. 36°

$$\frac{180^\circ}{5} = 36^\circ$$

47. Convert 80° to an angle measure in radians.

$$80^\circ \cdot \frac{\pi}{180^\circ} = \frac{80\pi}{180} = \frac{8\pi}{18} = \frac{4\pi}{9}$$

48. Convert $\frac{\pi}{12}$ to an angle measure in degrees.

$$15^\circ$$

$$\frac{180^\circ}{12} = 15^\circ$$

49. Convert 165° to an angle measure in radians.

$$165^\circ \cdot \frac{\pi}{180^\circ} = \frac{11\pi}{12}$$

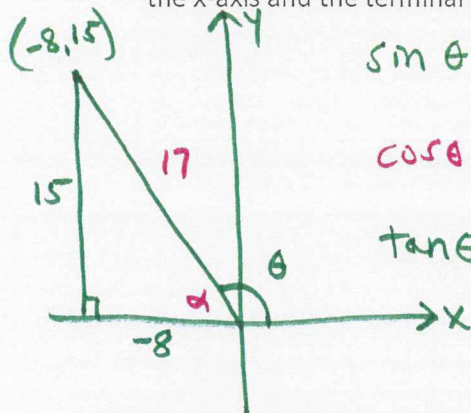
50. Convert $\frac{7\pi}{15}$ to an angle measure in degrees.

$$\frac{7\pi}{15} \cdot \frac{180^\circ}{\pi} = \frac{7 \cdot 180^\circ}{15} = 7 \cdot 12^\circ = 84^\circ$$

51. Convert 285° to an angle measure in radians.

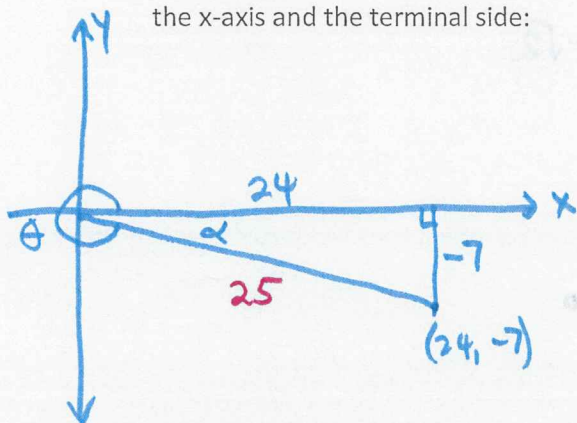
$$285^\circ \cdot \frac{\pi}{180^\circ} = \frac{57\pi}{36} = \frac{19\pi}{12}$$

52. A ray is rotated counter clockwise from the positive x-axis, and the terminal side passes through the point $(-8, 15)$. Determine the six trigonometric ratios of the central angle θ formed by the x-axis and the terminal side:



$$\begin{aligned}\sin \theta &= \frac{15}{17} & \csc \theta &= \frac{17}{15} \\ \cos \theta &= -\frac{8}{17} & \sec \theta &= -\frac{17}{8} \\ \tan \theta &= -\frac{15}{8} & \cot \theta &= -\frac{8}{15}\end{aligned}$$

53. A ray is rotated counter clockwise from the positive x-axis, and the terminal side passes through the point $(24, -7)$. Determine the six trigonometric ratios of the central angle θ formed by the x-axis and the terminal side:



$$\begin{aligned}\sin \theta &= -\frac{7}{25} & \csc \theta &= -\frac{25}{7} \\ \cos \theta &= \frac{24}{25} & \sec \theta &= \frac{25}{24} \\ \tan \theta &= -\frac{7}{24} & \cot \theta &= -\frac{24}{7}\end{aligned}$$

54. Without using a calculator, evaluate each inverse trig expression to determine the corresponding angle measure:

a) $\sin^{-1}\left(\frac{1}{2}\right) = \frac{\pi}{6}$

b) $\cos^{-1}\left(\frac{\sqrt{2}}{2}\right) = \frac{\pi}{4}$

c) $\sin^{-1}\left(\frac{\sqrt{3}}{2}\right) = \frac{\pi}{3}$

d) $\tan^{-1}(1) = \frac{\pi}{4}$

e) $\sin^{-1}\left(\frac{\sqrt{2}}{2}\right) = \frac{\pi}{4}$

f) $\cos^{-1}\left(\frac{1}{2}\right) = \frac{\pi}{3}$

$$g) \tan^{-1}(\sqrt{3}) = \frac{\pi}{3}$$

$$i) \tan^{-1}\left(\frac{\sqrt{3}}{3}\right) = \frac{\pi}{6}$$

$$k) \sin^{-1}(1) = \frac{\pi}{2}$$

$$m) \cos^{-1}(1) = 0$$

$$o) \cos^{-1}(-1) = \pi$$

$$q) \cos^{-1}\left(\frac{-1}{2}\right) = \frac{2\pi}{3}$$

$$s) \sin^{-1}\left(\frac{-\sqrt{3}}{2}\right) = -\frac{\pi}{3}$$

$$u) \sin^{-1}\left(\frac{-\sqrt{2}}{2}\right) = -\frac{\pi}{4}$$

$$w) \tan^{-1}(-\sqrt{3}) = -\frac{\pi}{3}$$

$$h) \cos^{-1}\left(\frac{\sqrt{3}}{2}\right) = \frac{\pi}{6}$$

$$j) \sin^{-1}(0) = 0$$

$$l) \cos^{-1}(0) = \frac{\pi}{2}$$

$$n) \sin^{-1}(-1) = -\frac{\pi}{2}$$

$$p) \sin^{-1}\left(\frac{-1}{2}\right) = -\frac{\pi}{6}$$

$$r) \tan^{-1}(-1) = -\frac{\pi}{4}$$

$$t) \cos^{-1}\left(\frac{-\sqrt{3}}{2}\right) = \frac{5\pi}{6}$$

$$v) \cos^{-1}\left(\frac{-\sqrt{2}}{2}\right) = \frac{3\pi}{4}$$

$$x) \tan^{-1}\left(\frac{-\sqrt{3}}{3}\right) = -\frac{\pi}{6}$$